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EXAMPLES FOR PRACTICE IN QUANTITATIVE CHEMICAL ANALYSIS.

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CONTINUED FROM APRIL NUMBER.

EXPERIMENT II. — *Determination of Water and Sulphuric Acid in Gypsum.*

To estimate the water, weigh out about 7 grammes of the finely powdered mineral in a porcelain crucible of known weight. Heat the crucible over a Bunsen burner, at first gently but afterward strongly. Allow the crucible to cool, and weigh it with its contents; again heat, cool and weigh, and repeat these operations until the weight remains constant. Half an hour will be time enough for the whole work. The total loss of weight represents the water which the mineral contained. In our experiment 7.043 grammes of transparent crystallized gypsum (*Selenite*) lost 1.48 grammes.

$$7.043 : 1.48 = 100 : 21.01\%$$

For the formula $CaSO_4 + 2H_2O$, theory requires 20.93% of water.

To determine the sulphuric acid, transfer the ignited mineral in which the water has been determined, from the crucible to a beaker of 600 or 700 c. c. capacity, pour upon it 100 c. c. of dilute chlorhydric acid (free from sulphuric acid,) prepared by mixing 2 parts of water with 1 part of the strong acid. Heat the

mixture 20 or 30 minutes, or until the gypsum has all disappeared. Pour in water enough to half fill the beaker, heat the solution nearly to boiling, and add to it a solution of chloride of barium, little by little as long as any precipitate continues to fall. Stir the liquid continually with a glass rod while adding the chloride of barium, and during the subsequent heating, in order that no "bumping" may occur. After enough chloride of barium has been added, keep the liquor hot for five or ten minutes, then set it aside for 10 or 12 hours in a moderately warm place, in order that the particles of sulphate of barium may subside, and become somewhat compacted and coherent.

Pour the clear supernatant liquor upon a six-inch filter, wash the precipitate in the beaker by decantation, first with boiling water, then with a boiling solution of acetate of ammonium (to decompose and remove any chloride of barium which may have been dragged down in combination with the sulphate) and finally three or four times with boiling water. Then transfer the precipitate from the beaker to the filter, pour hot water upon it until all the chloride of calcium has been removed so that a drop of the filtrate carefully evaporated to dryness upon a slip of glass leaves no residue. Dry ignite and weigh as in the preceding experiment.

Molec. wt., of BaO, SO_3	:	Molec. wt., of SO_3	=	The wt. of, $BaO.SO_3$ found.	:	wt. of. SO_3 therein

From the aforesaid 7.043 grammes of mineral, there was obtained 9.5545 grammes of BaO, SO_3 (= 3.28 grammes SO_3).

$$7.043 : 3.28 = 100 : 46.57\%.$$

Theory requires 46.51%.

The percentage amount of oxide of calcium contained in the mineral was estimated "by the difference." $100 - (21.01 + 46.57) = 32.42$. Theory requires 32.56. The result of the analysis may be tabulated as follows:

	Found.	Theory.
CaO (by difference) . .	32.42	32.56
SO_3	46.57	46.51
$2H_2O$	21.01	20.93
	100.00	100.00

EXPERIMENT III. — *Estimation of Chlorine in Chloride of Sodium.*

Heat a quantity of pure, powdered chloride of sodium in a porcelain crucible in order to expel hygroscopic moisture. Weigh out about 4 grammes of the dry powder, place it in a glass flask of about a litre capacity, and dissolve in 200–250 c. c. of water. Heat the solution moderately, add a quantity of nitrate of silver solution, cork the flask and shake it strongly. As soon as the chloride of silver has become curdy and coherent and the liquid clear, add to the latter a drop more nitrate of silver. If a fresh precipitate is produced, add as much more nitrate of silver as may seem fit, again heat and shake the liquor, and repeat these operations until the addition of a drop of nitrate of silver ceases to produce any precipitate. Wash from the cork any particles of chloride of silver which may adhere to it, fill the flask completely with water, close its mouth with a small glass plate, invert it in an evaporating dish (a No. V. Berlin dish will do) two-thirds full of water and remove the glass plate, shake the flask gently until all the chloride of silver has fallen from it into the dish, then remove the flask from the dish by a sudden jerk, in such manner that none of the chloride of silver shall be thrown from the dish. Finally transfer the precipitate from the dish to a six-inch filter, and wash it with hot water until the filtrate ceases to leave any residue when evaporated on glass. Dry the precipitate, transfer it to a porcelain crucible, taking care to leave as little of it as possible upon the paper. Burn the filter on the cover of the crucible and afterward heat the precipitate in the crucible until the mass begins to fuse upon its edges.

Four grammes of chloride of sodium gave 9.7825 grammes of chloride of silver (=2.4192 grammes chlorine), or 60.48 per cent. Theory required 60.66 per cent.

EXPERIMENT IV. — *Estimation of Water and Magnesia in Epsom-Salt.*

To prepare a sample of crystallized salt proper for analysis, heat 40 or 50 grammes of commercial epsom-salt with as much boiling water as may be needed to dissolve it, filter the boiling

liquid into an evaporating dish, and leave the latter at rest until its contents have become cold. A coating of crystals will then be found adhering to the bottom and sides of the dish. Pour off the liquor from above these crystals and fasten the dish in a vertical position, in such manner that most of the mother liquor may drain away and the crystals be left nearly dry. Press the moist crystals repeatedly between folds of thick filter paper until they become so dry that they no longer stick to the paper. Then weigh out about four grammes of the crystals for analysis.

To determine the water in the crystals proceed as in the analysis of gypsum (*Exp. No. II.*).

In our experiment 3.664 grammes of freshly crystallized epsom-salt lost 1.879 grammes of water on being heated. Or, in terms of per cent, 51.28. Theory requires 51.22 per cent.

To determine the magnesia, transfer the ignited salt from the crucible to a beaker of about 700 c.c. capacity, dissolve it in some 400 c. c. of cold water, stir into the solution 40 or 50 c. c. of a tolerably strong solution of chloride of ammonium together with enough ammonia water to make the liquid slightly alkaline. Finally, add a quantity of a solution of ordinary phosphate of soda, and stir the mixture thoroughly, taking care not to touch the sides of the beaker with the stirring rod. The precipitate of phosphate of magnesium and ammonium which falls, is a crystalline substance liable to adhere firmly to any scratch, or even mark, which the stirring rod might leave upon the sides of the beaker in case it were allowed to rub against the glass. The liquid must not be heated at any time, lest the formation of the crystals be hindered.

As soon as it appears that a slight excess of the phosphate of sodium has been added, cover the beaker and leave it at rest for 12 hours or more, in order that the crystals of the double phosphate may all be deposited. Then pour the liquid and precipitate upon a six-inch filter, and wash the precipitate with a mixture of three parts water and one part strong ammonia water until a few drops of the filtrate show only a slight cloudiness on being mixed with a drop of nitric acid and a drop of nitrate of silver. Dry

the precipitate, ignite it intensely in a porcelain crucible, and weigh the pyrophosphate of magnesium which remains.

There was obtained 1.672 grammes of $2MgO, P_2O_5$ (=0.6025 grammes MgO.). This result indicates 16.44 per cent. of magnesia in the epsom-salt. Theory requires 16.26 per cent.

The sulphuric acid could of course be determined by precipitating it with chloride of barium, as in Exp. II., or it may be estimated by the difference, as was done in the present case. The complete analysis was as follows: —

	Found.	Theory.
MgO.	16.44	16.26
SO_3 (by difference) . . .	32.28	32.52
$7\ H_2O$	51.28	51.22
	100.00	100.00

EXPERIMENT V. — *Determination of Lime in Marble.*

Reduce a quantity of pure white marble to fine powder and dry it upon a water bath. Weigh out 3 or 4 grammes of the powder, place it in a beaker of about 700 c. c. capacity, and pour upon it 40 or 50 c. c. of water. Cover the beaker with a glass plates and add dilute chlorhydric acid, little by little, to the water, until the whole of the marble has dissolved. About a hundred c. c. of the acid may be required to effect the solution. As soon as the marble has dissolved, fill the beaker half full of water and boil the mixture. Add a solution of oxalate of ammonium in slight excess, together with enough ammonia water to make the mixture alkaline. Leave the mixture at rest for twelve hours or more, then transfer the clear supernatant fluid to a six-inch filter, and wash the precipitate in the beaker, four or five times, by decantation. Finally, transfer the precipitate to the filter, and wash and dry in the usual way. Heat the precipitate in a porcelain crucible for fifteen minutes to a temperature just below redness, in order to convert the oxalate to carbonate of calcium. If the material analyzed were absolutely pure, and the work entirely accurate, the final weight of carbonate of calcium obtained, would of course be identical with the weight of marble taken.

Since it is difficult to convert oxalate of calcium to the condition of carbonate, by ignition, without decomposing a portion of the latter, it is well to moisten the ignited precipitate (after it has been cooled and weighed) with a solution of carbonate of ammonium, to dry the mixture, first upon a water bath, and then over the lamp at a gentle heat, and again weigh it. This last weight will give the true amount of carbonate of calcium.

In our experiment 3.101 grammes of marble were taken, and 3.0975 grammes of carbonate of calcium were found. 3.0975 grammes of CaO, C O_2 represent 1.7346 grammes of CaO. Hence we found 55.93 per cent of lime, instead of the 56.00 per cent required by theory.

Numerous forms of apparatus for determining the proportion of carbonic acid in lime stone will be found figured in works relating to quantitative analysis.

[*To be continued.*]

SCHOOL EXPERIENCES.

Second.

It has often occurred to me, Mr. Editor, when reading the strange changes recorded in the lives of men who have filled pages in universal history, that they are not, after all, exceptional characters. "The simple annals of the poor," though lacking the wide interest attached to the deeds of those who have founded or reformed communities, are, in miniature, quite as striking illustrations of variety in deeds or emotion as the former, if once our vision be contracted enough to examine their varying details. The lad who gains a name for honor or infamy in his village or town, is but a beginning of the subsequent development of the man, who by using the circumstances of life, becomes a Hampden or a Hastings. Change of residence or latitude, prosperity, adversity, embittered feelings engendered by trifles, pride sprung from flattery or temporary authority — these, and such as these, aid to make the broad sea that flows, deep and dark it may be, between

youth and maturity; between the high and the humble. And thus if great things may illustrate small ones, my change of residence, which, at the age of ten years, took me from my native country town to the neighborhood of a growing city, was an event which, as in a thousand other cases, has altered the whole course of an inconspicuous life.

My second home in childhood was upon the border of a somewhat remarkable New England river. Eastward lay on the left bank of the stream, and down its course, a swell of land of half a mile in ascent, bordered by the abrupt and wooded bank of the broad and noisy stream. Along the bank, and just within the stream at its usual height, were thousands of bowlders of every size and shape half submerged, but at times of high water completely covered, indicating their existence by large ripples and eddying whirlpools. Just above these, on the banks of a small creek which received a brook from a meadow stretching inland, was my home for many months. A new world here opened for me. In my entire life I had seen no body of water larger than the small winter pond, formed by some obstructed rivulet to turn a saw-mill for a few months: but here was a broad deep stream just above the rapids to whose locality I have alluded, and across this the road that passed our residence was continued by a ferry-boat of enormous dimensions, at least to my youthful eyes, being long enough to carry a stage-coach without unharnessing the team, and guided by a stout wire reaching from bank to bank.

But the small dories that were used to cross the stream were even more attractive to me than the ferry-boat. I first saw one from the window of our parlor the evening we reached our hired house. The sun was nearly down, and as the oars rose and fell, his rays gave their broad blades the appearance of silver. How these aided in carrying my father and older brother toward the opposite shore, was as yet all a mystery; but none the less was my imagination excited. It may be doubted whether a bevy of flying men, crossing the air by some Dædalian contrivance, would more amaze a youth of ten at the present day, than a common Ames-

bury dory at that time did my inexperience. How could they get back when the sun took the sheen from the water, on which they seemed to slide? How find the way in the darkness with no fences to mark their road? Should I ever see my brother and my father, thus swallowed up from view as they disappeared over the far shore? With such questions I plied my mother, wearied though she was with the long ride, and busied with household cares in a strange home. But little satisfaction was gained from her attempts to make me understand what so perplexed me. Yet this little was better than none, and a supper of fresh milk filled my stomach, stopped my burning curiosity for the time, and, with my weariness sent me to sleep regardless of father, brother, river, dory, and all beside.

Inquisitive boys who go to sleep with unsatisfied curiosity are early risers. The morning sun shone brightly in at my window. My lost brother was lying by my side, asleep from the previous late evening's watch. I stole quietly from my place, dressed me hastily, and stealthily issued from the house to explore the mystery of the river. Following the sandy road a few rods by a circuitous direction, I came suddenly upon the ferry-boat leaving the shore with an early freight. But more wonderful than this, a neighbor was just landing in his dory, having it well laden with nice shad taken from a fly-net that he had anchored in the stream. His contented strokes as he brought the boat to land showed me the manner in whichmy fat her and brother had disappeared the evening before, and speedily dissipated the whole mystery of crossing the river with glittering oars. More than this. He cut a small stick with a fork in it, passed it through the mouth of the fish, and, calling me to him, said, "You are the Derby boy; I know you by your looks: you are just like your father. Here, take this as a present for his breakfast." I took, with some hesitation, the scaly creature, swung it over my shoulder as I had seen other burdens borne, and in a few minutes, to my parents' astonishment, stalked into the house with an air such as one exhibits who has done a good thing. Alas, for youthful exploits! They cooked the fish, and scolded the purveyor because he had gone to the river without leave, suggesting ominous terrors should he be guilty of a like offence.

If these dreaded promises damped my ardor for attempting discoveries along the stream, they were more than balanced by the announcement on the part of my father that, in a few days, I was to attend a select school across the river, in the centre of the growing town, and to row over with him in the morning as he went to his occupation, and return at evening. Here were visions to stimulate a young peasant who had seen more domestic animals than men, and whose ideas of real life were less reliable than those which dribble from the diluted pages of some semi-monthly magazine of the present day. How I qnestioned, and mused, and fashioned what I would do, and what become! How suddenly my best garments lost their attractiveness as I heard that the boys at Mr. Hewes's school wore real broadcloth caps and spencers and trousers; that some sported boots even. This was beyond anything Squire Rowell's son did in Royalton, though it were Sunday. And then what kind of a master was I to have, and how would the school-house look, and where should I sit when I was there, and what books should I study? These interrogatories came up thick and somewhat disheartening, none the less so that no one could give me an intelligent answer. My brother had a place in a grocery as a boy to do everything which anybody wanted done, and had no time to make investigations or even to talk with me about my new fate. My father summed up what he knew, in the report that "Master Hewes knew what was best for boys and made them do it." My only remedy was patient waiting until time should solve my inquiries. There were sundry trips to and from the village shop on the part of my mother. Some of my few books were smoothed out and nicely covered with brown paper, on which "Daniel Derby's book" was written in good plain hand by a neighbor who had pretensions to scholarship. A cloth cap, to whose fashion I had hitherto been a stranger, was added to my best suit, and a new pair of real calf-skin shoes, a little too short for comfort, but the more fashionable, completed my personal presentment.

It was eight on a fine Monday morning, when my steps were directed to the little boat which was to bear me across the water my eyes had so often looked upon with longing. My new bravery

was all carefully adjusted, my dinner in a bright tin pail, my books corded and looped for convenient carriage. The little skiff swung, secured to a willow root by a chain and padlock, to and fro, on the variable eddies of the downward tide. It was soon released, drawn to the slightly shelving beach of sand hard by, where the ferry-boat used to land. My brother took what I then called the "flat end" of the dory, my father the seat in the middle to use the oars, and directed me to ensconce myself in the "sharp end." A light shove, a gentle rocking, the turning of the craft, as its bow was pointed for the farther bank, gave me the first sensations of being water-borne I had ever experienced. Each little listing of the boat as it declined from its true level at our leaving the shore made me gasp slightly as if about to be overset; but a few moments dissipated my nervousness, and left me free to enjoy what, to me, was like a sail through the blue ether. Reader, have you ever known a real Merrimac dory, built close by the home of Whittier? Have you seen the aërial craft just rest on the silvery surface of the wave, and play and whirl under the lightest breath of air? Have you leaned over its stern as some stout oarsman drew it along the watery way, and then tried to count the colored pebbles on the shallow bottom, all distorted by the wake? Have you sat on its stern seat, and, using the thin paddle, made it follow your slightest movement of wrist or arm? Have you drifted slowly, on a hot summer's day, along the bank, under the skirt of birches, and alders, and pines, and maples, and hemlocks, and the plundered sassafras, all whose shade was the coolness of a grotto, and whose odors more balmy than citron? Have you dared, in its frail and buoyant strength, the rapid of the current, and the surge on the bar at the mouth of the stream? Have you made it your tent on the green shore when benighted on some fishing excursion by torchlight, or caught by the on-coming August shower? Have you anchored, miles from our rocky coast, with naught but its thin bottom between you and a watery resting-place, and hung your expectant line over its gunwale, to entice some thoughtless cod to your waiting tub? If so, put these and all its other attractions together, and you will realize a

part of my delight as I crossed the untried river under the sun's bright glow. School expectations, new outfit, books, fears for the future, home, were naught to me. As one spell-bound, my eyes peered into the deep water that seemed to run from under me, and my imagination called up all forms of narratives I had heard, of strange men across the globe, of fabled beings beneath the waves of ocean, in halls bright with the glories of some mysterious flame, of fishes which could not float in deepest rivers because of their greatness, of groves of coral extending their variegated branches along hundreds of acres on the bottom of the sea.

But my reverie is broken by the boat's touching lightly upon the common landing place. We step out, and it is secured in the usual manner to the trunk of a small tree growing near. Together we ascend the sandy bank, and are soon talking cheerfully upon my new destination. Now it is so soon to be entered upon, I am strangely indifferent to what has been for days the burden of my thoughts.

Master Hewes's "temple of science" stood near the corner of a street running parallel with the river and crossing the "ferry road," as it was called in those days. A rough board fence enclosed it on two sides, a long carriage-shop formed its rear boundary, and a pretty fence six feet high, entered by an arched gateway of carved pine, formed its street limit. The yard contained one-fourth of an acre. The school-building was of a form unusual in those days, or even at present, being octagonal, and quite high, surmounted by a lantern of glass, through which it was mainly lighted and ventilated. A small porch, on the front and rear faces respectively, gave entrance to the building, and egress into the playground that occupied the rear of the lot and three-fourths of its surface. On entering the front porch one saw on his right a door that led to the cellar, and on the left a closet of good size that contained conveniences for clothing, shoes, umbrellas, and similar articles. The centre of the room as you enter shows you a large stove of soapstone, with a tall pipe issuing from its top, and passing perpendicularly upward to the lantern, through whose covering it issues. On four of the sides are desks seating sixteen pupils, four upon a

side. The master has his desk upon the left of the door. The right side contains handsome shelves for a few reference books, some specimens of stuffed skins taken from wild animals, two globes of small size, a telescope, and a quadrant. The floor whereon stand these shelves, as well as the teacher's desk, and those of the pupils, is raised seven or eight inches from the general level, bounded outwardly by the wall, and inwardly, except where the doors open, by a circular sweep, leaving an area of about eighteen feet in diameter. The desks all face the centre of this area, and of course, the pupils are full in each other's sight.

From my description you will have inferred that the full complement of this school was sixteen boys, which was the fact; but sometimes Mr. Hewes took two or more additional ones, and gave them temporary seats on his own face of the octagon. It happened that myself was one of those unlucky supernumeraries, thus awkwardly made the "observed of all observers," and presenting an inviting subject for the petty tyranny which seems naturally to be exercised in most schools, over new comers. My companion in distinction, who sat on the other side of the master and near the door, was a boy named Tracy, — Dexter Tracy, — son of a prominent citizen in the town, and a lad that had earned his position by the unusual amount of notice which he elicited when in company with the other pupils in school, or elsewhere.

You may imagine me, shamefaced and timid, at ten years of age, spending my first forenoon among strange scenes and stranger faces, all ignorant of what I was to do, and what was to be my experience, as I thus entered upon active life, and excuse me if I defer its realities to another time. D. D.

ENGLISH GRAMMAR.

At the meeting of the Association of High and Classical School Teachers of Massachusetts, Feb. 26, 1870, Bedford st., Boston, Dr. Taylor, of Andover, gave it as his opinion, that an uninflected language, like the English, is really the best, though a language rich in terminations might have *special* advantages over one that was

not. Also, in answer to another question, he granted "that the student of the classic authors must make the word-picture of the author's" thought in his own language, and not in that of the text before arriving at its meaning. Dr. Gardner, of Boston, believed "that the student, except in rare cases, like Prof. Felton for example, did not receive the boasted advantages from the style and thought of classic authors; that it was impossible for two sufficient reasons, — the length of time given to the study, and the immaturity of the student's mind." Such is the invaluable testimony of these classic Titans.

One newspaper report says, "Dr. Gardner made a terrific onslaught upon both the Greek and Latin, and thought the time was near at hand when they would be shelved, like Hebrew." True, all but the *onslaught*. It is worthy of note that so accomplished scholars and teachers as Drs. Taylor and Gardner do not feel called upon in an assembly of educated teachers to glorify the beauties and sublimities of Virgil and Homer, any more than they would offend good taste and sense by *arguing* the *excellences* of Milton and Shakespeare to such an audience, however pleasant to unfold their beauties to pupils; they would as soon think of proving that sunshine is pleasant. No one questions the merits of these authors. The only question with regard to them is: How can we give the student in the shortest time the best knowledge of them? Can the general scholar afford to learn their language, ignoring translations, when we have such a translation of Homer as Bryant has given us thus far? bringing the immortal poet within easy reach of all students, and establishing at the same time the great power and flexibility of our own language.

There was no onslaught upon Greek and Latin, — only a manly and indignant utterance against the stale sentimentalism of those who talk about "the student's catching the power and spirit of the original," and who think they have a duty to perform in upholding the reputation of the classic authors. What is good in the classics is immortal; every one knows that; why argue it? Let us put their creations to the best use. That students should receive high culture under such teachers as Drs. Gardner and

Taylor, studying Greek and Latin, is no mystery. But the success is not due to the dead authors nor their dead language, but to the untiring energy, the indomitable will, perseverance and intense love of labor of the living teacher. They would inspire this same love of work, which is as indispensable in education as in everything else, to secure the highest results, whether they taught Greek and Latin, or Cherokee and Choctaw.

Not that the two last named languages would furnish the same attractive points or useful knowledge, but that the pupils would receive the discipline and habits of industry that would insure their subsequent success in the different walks of life. How can we shorten the various paths, then, that lead to a truly liberal education, becomes the great question of the present day. As an important step we would propose to economize the labor now spent upon the study of English grammar. We would have the pupil learn language — not the philosophy of it — or grammar, only so far as he can make it, by judicious direction of the teacher, for himself. We can see no good reason why our analysis of the language may not be so far simplified as to enable the pupil to understand the terms used, without having a classical education. Why should we have *case* at all in our language? Is it needed? The French have discarded it — why may not we lay it aside? How is it to be done? Very easily, if all can agree upon it. Call all *possessives, adjectives,* which may sometimes be used as nouns, like other adjectives. The only serious difficulty in the way of abolishing *case,* is the form of six or seven pronouns, but that is no real obstacle, without even admitting the correctness of the Dean's English; for we may call, *I, thou, he, we,* etc., subject pronouns; *me, him, us,* etc., object pronouns, if it is thought best to preserve the words, *subject* and *object* in analysis, to which there seems to be no great objection. The pupil cannot distinguish between the same word as subject and object, and when told that *it,* in the sentence, *I believe it,* is governed by *believe* in the objective case, and in the sentence, *that is it, it* is nominative case, he cannot account for the distinction. It is useless to tell him *believe* is a transitive verb and governs the objective case, unless he is at the same

time told that *is governs* the nominative case. The usual reason given to pupils, that the act passes over to the object, as John strikes James, is absurd, when he sees in most cases there is no action at all upon the object, except in some metaphysical sense. Therefore, as a matter of fact, if case is to be retained, we would teach, that prepositions and some verbs govern nouns *in case only*, and others, like *is, are*, etc., govern in case and number. But why not discard case altogether, have only the *subject, predicate*, and complement (something to complete the idea of the predicate)?

Again, how is it possible for the young pupil to understand why the *article* and *adjective* are so called? This huge obstacle to the child's progress we have by tradition; no necessity in the complete and thorough understanding of the language exists for it. He sees readily great propriety in the name of *adverb* (added to the verb), why may we not make the word *adnoun* be as useful to him as *adverb?* He sees the adverb is *thrown at* or *to* the verb, as much as the adjective is *to* the noun. Why not have *adnouns* as well as adverbs — the article and adjective, *adnouns*, until at least the higher course of language is reached, called English Literature. We believe a grammar of twenty-five or thirty pages might be made, comprising all the young pupil need learn of grammar as a science and art; and the time now worse than thrown away in the study of the history and philosophy of the language called grammar, be profitably spent in acquiring the use of language. If one-half of the time now spent on English grammar were employed in committing. in the most perfect manner, specimens of the best English gems in thought and style, and one-fourth of it in imitating those specimens in composition and talk, and the remaining fourth in the study of words and sentences, their relations and dependencies, we firmly believe the pupil would not only be more generally educated, but would acquire such habits of excellent speech and composition as can be obtained in no other way. Is there not an opportunity to improve our borrowed analysis and nomenclature in grammar, and is it not very desirable? E. H.

ARITHMETIC.

"TIME is money," says the old adage. With the teacher it is more than money, and more in proportion as the mental is higher than the material. Arithmetic, though so important, has absorbed too much time and strength. The enthusiastic teacher desires to gain more time for reading, for the study of language, for making his pupils acquainted with the beautiful in literature and art, for object-lessons and vocal culture. He can gain a portion of this time by throwing aside the text-book in Arithmetic as far as it enslaves him, and teaching *topically*.

We suggest the following order of topics as more philosophical than the arrangement in many text-books.

Numeration of whole numbers and decimals. It is as easy for scholars to enumerate on the right of the decimal point as on the left. Addition and subtraction of whole numbers and decimals as far as millions and millionths. Multiplication and division of both whole numbers and decimals. Federal Money, Common Fractions, and Compound Numbers. Percentage without regard to time, viz: Percentage proper, Commission, Brokerage, Insurance, Stocks, Taxes, Custom House Business and Simple Discount. Percentage with regard to time, viz: Interest, True and Bank Discount, Proportion, Profit and Loss, Equation of Payments, etc.

An experience of several years in the school-room has convinced the writer that it is a waste of time to teach beginners in Written Arithmetic the definition of arithmetic.

Nor is there any need of requiring fine or text-book definitions of each of the fundamental rules before the scholar has used them in practice. If a definition be required at all, let it be simple and child-comprehensible.

Reduction should first be taught with simple numbers. Let the scholars frequently reduce such examples as eight hundreds, four tens and seven units to units, and back again.

In addition, the scholar should never be allowed to write down at one side the carrying number, but taught to add it as the *first* figure of the next column. Allowing scholars to add by using their

fingers, also lessens the discipline which is so desirable in first operations.

Subtraction should be taught but one way when the lower figure is larger than the upper, and that is to call the next column figure of the minuend one less rather than to add one to the figure in the subtrahend.

It is well to require scholars to write out the names of the terms used even in simple work, for it shows a thorough understanding of every part of the operation. And this writing the names of the different results and factors should be continued throughout the study.

Scholars should be familiar with such examples as product and one factor given to find the other factor. Dividing by the factors of a composite number being never used after it is learned, it should not be taught till the scholar is perfect in all other parts of the arithmetic.

In common fractions, group under one rule all examples in addition, subtraction and division, by reducing to a common denominator and then adding, subtracting or dividing the numerator or numerators, as the case may require. In this way twelve rules are reduced to one.

After the scholar has become perfectly familiar with this method let him learn any of the shorter ways.

In division of simple fractions let him learn to divide by inverting the divisor; but in no case should this be explained, except to classes higher than the grammar grade. In all cases let the whole or mixed numbers, if any, be reduced to improper fractions; so that always one fraction is to be divided by another.

A few mental examples, perhaps made by the scholars, should be daily given. Let them involve the principle under discussion.

Quickness and correctness of work are of more practical value than explanations or definitions, and of infinitely more value than ability to solve puzzle or catch examples. A few minutes a day spent upon the fundamental rules will insure immediate improvement in this respect.

A well-known teacher and practical mathematician recently informed the writer, that he once directed the assistants in his Grammar School to spend half the time each day devoted to arithmetic, for six months, in this mechanical work. At the end of that time the average per cent of correct answers in the whole school, increased from about twenty per cent to over eighty per cent; and twice as many scholars from the first class entered the High School, as entered before the plan was adopted, when the whole year was principally spent upon principles, definitions and explanations.

If these views are true, committees and superintendents should judge of a teacher's ability by the correctness and rapidity of the answers her scholars give, rather than by their natural power to solve arithmetical puzzles.

In no study do scholars need so frequent reviews as in arithmetic. These can be given in the shape of review combination examples for home lessons, to be brought in neatly performed on slate or paper the next morning.

Written explanations for upper classes are very beneficial.

Many of the rules in arithmetic can be readily condensed for easier committal and remembrance; as, for instance, the Merchant's Rule in Partial Payments. It may be thus given: From the amount of the principal, or face of the note, subtract the added amounts of the indorsements. C. F. K.

"ONE IDEA."

PERHAPS the reason for the continuous flow of new school-books is that a perfect one has not yet made its appearance. Probably no man ever built himself a house that satisfied him. Something might have been different, and he is uneasy till he has tried again; but perfection eludes all his endeavors.

The same fortune attends the making of school-books. An author starts off with one idea, which he conceives other authors have overlooked. He models his book to that one idea, overriding, it may be, forms which have been in use for ages, and are

as well understood as anything in the language, and have as firm authority as anything else in the dictionary. Absorbed with his hobby, the author runs into other faults, perhaps far more serious than those he assumes to correct.

I am led into these reflections, by the examination of several books of recent appearance. In one,* an advocate for the use of infinitives in the treatment of geometry assumes a sphere to be a regular polyædron of an infinite number of faces, whose aggregate multiplied by $\frac{1}{3}$ of radius will give the volume. From this it would appear that the regular icosiædron is no longer the limit of regular polyædrons, in regard to the number of faces. The same author considers a frustum of a pyramid or cone composed of layers of equal planes having no thickness.

There is another book † of more recent date, which deals in infinitives of a different kind. We must not use the significant and well authorized word, "*times*," in multiplication and division. Thus, "At 37 cents a yard 8 yards will cost eight 37's of cents; eight 7's of units are 56 units, eight 3's of tens are 24 tens, etc."

The extraordinary use of the apostrophe, here and elsewhere, unfortunately is left unexplained. Again: "As many shad at 32 cents apiece, can be bought for 175 cents, as there are 32's in 175. There are five 32's in 175, etc."

And what is more singular still, we are told that the hitherto well-established principle, "In any proportion the product of the means is equal to the product of the extremes, is not true when the terms are denominate numbers; thus in the proportion 4pk.: 5pk.= \$12:\$15, dollars multiplied by pecks would be neither dollars nor pecks, nor anything else; but \$15. multiplied by the number of units in the first term, 4, would be \$60, etc." If this illustration shows anything, it shows that in all operations upon numbers, the numbers are used as abstract numbers. We no more multiply \$15 by 4 than we do by 4 pecks. The truth is, we do neither; money cannot be produced in this easy way.

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* Brooks' Geometry.

† Walton's Illustrative Practical Arithmetic.

But where is his consistency? Just two pages preceding this remarkable statement, we read, "If having two or more ratios as $3: $5 and 3 days: 5 days, we multiply one ratio by the other the product is a compound ratio." Now, does this operation give dollars, or days, or anything else? The author does here what we must always do in operations upon numbers; he takes the corresponding abstract numbers, with which he performs his multiplication.

Only a casual inspection is necessary, to discover the utter impossibility of carrying out his idea to its full extent, without making his book ridiculous. His attempt has involved him in numerous inconsistencies; and, worse than all, has led him into such awkward and excessive verbiage in some places, that only mature and well-instructed minds can discern the truth attemped to be illustrated.

Put side by side, the two following rules: "Divide the amount by the amount of $1 for the given time and rate."

"Multiply the third term by the product of the number of units in each of the second terms, and divide the result by the product of the number of units in each of the first terms."

The first is in the usual form, concise and intelligible; and the author shows his good sense in not applying his hobby. The other needs no comments of mine to point out its misty verbiage. If it be intelligible to the learner, it is because the author has refrained from running his hobby into all its parts, for which there is as good reason as he had for what he has done. Thus: Multiply the units in the third term by the units in the product of the number of units in each of the second terms, and divide the units in the result by the units in the product of the number of units in each of the first terms.

It is the abstract numbers themselves that we write and marshal in various evolutions; and the less said about the imaginary objects represented, while these evolutions are in process, the better. We add one number to another, substract one number from another, multiply or divide one number by another. And we do it in the aggregates, if possible; but if we are obliged to descend to parts, we make the parts as large as we can manage. One teaching should

aim to secure ability in this direction. Moreover, there should be connected with multiplication and division, the idea of factors, which is exceedingly important. The principal difference between a ready mathematician, a genius in mathematics. and others, consists in ability to discern, separate, combine, and cancel the factors of numbers. It seems to me that the teaching of this book tends to blind the pupil's perceptions to any such idea.

Finally, we may say real objects may often be used to advantage in illustrating the nature of numbers, and some of the operations upon them. In a primary book introduce objects and pictures, and play upon them at pleasure; but for Grammar and High schools, let us have a book in which principles are stated, and illustrations given, in the most direct and concise language possible; and all subjects treated in a scholarly manner, diverted of all puerile verbiage and hair-splitting hobbies.

J. S. R.

FAULT-FINDINGS.

In matters of education, teachers should give law to public opinion. If they cannot do this just so far, they are unfitted for their positions; if they are unwilling to take the responsibilities of doing it, a sense of their incompetency should force them to leave the field to others. "If the trumpet gives an uncertain sound," etc.

The meeting of High School teachers, lately held in Boston, was one of great interest and profit. An earnest spirit seemed to pervade almost all who met and deliberated. Although so much was excellent, some words of blame ought not to be withheld. One gentleman, holding a conspicuous position as the head of one of our most important schools, declared that when his boys asked him if they should elect mathematics or the classics in college, he told them that the former would be of more advantage to them. But when they assured him that they would lose in rank by adopting such a course, that he told them to take the classics, — "to go in for present good." Would Arnold have given such a reply? Perhaps Benedict, the traitor, would have answered so, but not the

saint of Rugby. One sometimes wonders why so many young men attending college have so little true manliness. If in their preparatory course they are advised to "float with the tide," and "go in for present good," the wonder may well cease.

In the assertion — not proved — that the West had abandoned the classics, it was argued that the West was superior to the East in the production of man *as man;* that her school-houses were superior; her railroads superior. We will not quarrel with the West for what it produces or does not produce, but it seemed to us that the speaker scarcely proved his point, inasmuch as he said, "I grant that the West does not produce the brain power of New England." What is it that characterizes man *as man* excepting this very brain power? Mere physical development leaves man but an animal still.

As regards the school-houses of the West, we are not competent to pronounce an opinion at the present time. The railroads we have tried. Indeed, visiting the West, a few years ago, we scarcely dared to return home, because almost every second day brought in the report of an accident upon some one of the iron roads. Yet we shall be obliged to concede that the Central Pacific Railroad lies to the west of the Hudson.

What shall the young learn? A gentleman asserted that it was impossible for students fifteen, sixteen, and seventeen years of age to understand the *thought* of the Latin and Greek authors. And on another day the same person declared that the appreciation of the study of Milton was entirely beyond the capacity of scholars of that age. If they can neither understand a foreign tongue nor their own, they are in a pitiable condition indeed. But this we do not believe to be the fact. We *know* that it is not. "Their intuitions," as was well said by a gentleman in the course of debate, "are as quick then as they ever are." If a class of boys and girls of ordinary intelligence, in the highest classes of our High schools, do not acquire a fondness for the writings of such a poet as Milton, the fault is in the teacher, not in the taught. One who does not himself love the beautiful and the true may perhaps so deaden the

presentation of such subjects that they will strike no corresponding chord in the heart of the young. But woe to him that causeth one of these little ones to offend.

The study of French was advocated in preference to that of Latin and Greek. We failed to see why, if English translations could effectually supply the place of the latter, a similar course might not be advantageous with regard to the former, and so confine our reading wholly to our mother tongue, — supposing we were able to *understand* and *appreciate* it. The boy who uses a pony in the preparation of his lesson rarely translates as well as he who studies into the meaning of his author for himself. The catching of the thought (!) in the latter case compensates for, and surpasses any mere verbal elegance.

It is hard work sometimes to force a decided yes or no from a reluctant pupil. The meeting witnessed a similar difficulty on the part of one of its members. To the question whether the sole advantage to be obtained from the study of Greek and Latin was the possession of the *thought*, the answer was returned again and again that classical studies were an important element in a liberal education.

It will be unnecessary to say anything of the many valuable papers read at the meeting, because the *Teacher* has already secured several of these for publication, and they will speak loudly for themselves.

A Silent Member.

PLAN OF STUDY IN PRIMARY AND GRAMMAR SCHOOLS.

[*From Report of the School Committee of Cambridge.*]

In the early stage of education, including the Primary and Grammar Schools, the elementary facts of all branches of knowledge ought to be taught. The only selection admissible is that of the near in preference to the remote. Things visible and immediate must first be known and named. The statement that oxygen

and hydrogen combine to form water, has little meaning to a child, because the elements are abstractions; but any thing about the transformations of vapor, dew, frost, rain, snow and ice, interests him, for he sees some one of them every day. Sensible objects and their pictures are the chief food of a child's mind; perception and imagination, the chief faculties to be addressed.

Nor should the studies of one grade be regarded merely as a stepping-stone to those of another. The plan for each should be made suited to the wants of each. The studies of the Grammar School should not be merely what are necessary for admission to the High School, nor those of the Primary merely the requirements for entering the Grammar School. Each should be complete as far as it goes. Education, and not the passing of examinations, is the end of school training. Any system which fails to meet the wants of each age, and keeps artificial ends in view, will not only deprive the great majority of children of the chance of gaining important knowledge, but will fail to stimulate healthy enthusiasm.

The fatal objection to methods of teaching which do not precisely fit the need of the child at each age, is that the labor thus expended is labor lost, or nearly so. Memory is the only gainer. That gain will be quite offset by the dislike, or want of any liking, for knowledge for its own sake. The knowledge acquired will, moreover, be held by a doubtful tenure. Having never been assimilated, it stays as long as the "high pressure" lasts, and then evaporates.

The studies at present pursued in our Primary and Grammar Schools are Reading and Spelling, Arithmetic, Geography, Grammar, History of the United States, with exercises in Music, Penmanship, Calisthenics, and Drawing. The latter has been introduced during the present year, and is a step in the right direction, for the hand and the eye need education no less than the intellect. With this exception, this plan has undergone little change for many years, except in the text-books used.

Yet, can any one who has had to do with children believe that this plan is broad enough to answer all, or even the most imperative, wants of children between the ages of six and fourteen? In

some important directions it is wholly lacking; in a part of what it includes, it requires too much or pursues a method unsuited to childish years. Notice its chief deficiency. Nature is wholly ex cluded, except so far as its most general outlines are taught in the improved text-book on geography, now in use. The studies, of all the most attractive to children and the most important in training to habits of observation, are left to the High School, where, if the pupil proceed so far, it is not so much the facts of nature as their laws that he studies. For example, the pupil, when he reaches the second year of the High-School course, is taught "How Plants Grow," and how to classify them, when it is wholly by accident if he knows by sight and name a single tree, shrub, or flower. He is to construct a science from facts of which he is almost or entirely ignorant; which he has perhaps not even noticed. The study will, accordingly, lack meaning and interest in proportion to his ignorance. He comes to the study of Natural Philosophy, Chemistry and Astronomy with a mind equally untrained to observe the facts upon which these sciences are based. The panorama of earth and sky passes by the child season after season, but it gets scarcely a note of recognition at school, probably not at home, and his simple, childish wonder dies into insensibility. School and the outside world get to be regarded by him as having no connection or relation. It is only in his play that he comes in contact with nature. His sports may do something to save him from the neglect of the school.

This exclusion of nature from our plan of early education can be justified on no satisfactory principle. Not surely on the ground of the difficulty of the subject. For it must not be forgotten that it is mainly facts, phenomena, with only the most general classification or explanation, that must be taught at this early stage. The so called explanation, — which is only showing the connection between apparently isolated facts,—the study of science and its nomenclature, belong to later years. There is no greater difficulty in perceiving and naming the objects and operations of nature, than a child of two years encounters, for his whole learning is little more than this. Nor can this exclusion be justified on the ground

that children will learn these facts without the help of the school, for, except in the comparatively few instances in which the parent tries to supplement the work of the school, children do not learn them. They do not observe them, for no one has taught them to observe; it is just because the far greater portion of the children who attend the Primary and Grammar Schools get no instruction at home, that it is the more incumbent on the Public School to supply the deficiency. The educated will, the rich at least can, furnish their children with books at home; but children who are heirs only to poverty and ignorance, must depend solely upon the bounty of the Public School.

Nor need there be serious dfficulty in the method of teaching the elements of knowledge in the various departments of nature. Books written for children upon such subjects are now as common as they once were rare. But it would be wrong to place exclusive reliance upon them. "Object teaching," practised according to book-rules, is often a mechanical exercise in words; still more frequently the teaching is desultory and unsystematic; but the phrase is suggestive. There is no instruction that impresses like the object itself or its best representative. The best book about any subject gives the learner only second-hand knowledge. It must often be taken, because direct knowledge cannot be had; but where the object or its likeness can be seen, and the teacher is fit to guide, no book can be compared with it. It would not be difficult, for example, by means of the leaves, the bark, and, in their season, the flowers, to teach children to know the different kinds of forest and shade trees. The teacher must point out the peculiar structure of each, and show how it may be identified. They could afterwards be required to bring each a specimen, to tell where each species might be seen, and how distinguished. Then would follow lessons upon the common shrubs and flowers, the grains, the vegetables, and the different kinds of wood. Another series of lessons should be given upon birds, beasts, and insects, illustrated by charts and accompanied with reading upon their habits. Still another, and perhaps later, series would be upon the common phenomena of the air and the heavens, in which

the child should be taught to watch and discover for himself as much as possible. The materials used in building, and in the mechanical arts, articles of food brought from foreign countries, and the simplest facts of physiology would furnish subjects for lessons no less instructive and interesting. With teachers, of whom we have not a few, apt to teach and apt to learn, alert to feed the minds of their pupils with food convenient for them, can there be any great difficulty in putting into practice such a scheme of instruction as this? What better foundation could there be for scientific education or for practical life? Can there be any doubt that it would delight as well as instruct, invest the school-room with something of the charm of the outer world, and furnish a connection between its daily routine, and the living, moving world of realities without?

The teacher, also, hardly less than his pupils, needs the freshening influence of a wider range of topics upon which to communicate with them. His narrow book-routine is stifling. He needs constant contact with Nature and real objects, to counteract its poison, and to bring him into closer sympathy with the minds of his pupils.

"But how shall we get time for all this?" says the teacher who fancies himself crowded with what he has now to do. In two ways: by improving the methods of teaching what is now taught; and by banishing from the Primary and the Grammar Schools work which has no place there.

TWO ANGELS.

"There are two angels, that attend unseen
Each one of us, and in great books record
Our good and evil deeds. He who writes down
The good ones, after every action, closes
His volume, and ascends with it to God;
The other keeps his dreadful day-book open
Till sunset, that we may repent; which doing,
The record of the action fades away,
And leaves a line of white across the page."

Editor's Department.

FREEDOM OF TEACHING.

We have received a pamphlet bearing the above title, printed as "*A Reply to an Attack in the Boston Watchman and Reflector*," by Prof. W. P. Atkinson.

Mr. Atkinson is *Professor of English Literature* in the Massachusetts Institute of Technology. He has during the past winter delivered an evening course of lectures at the Institute, in which he "had undertaken to give an account of the present aspect of European affairs, considered as a part of history, endeavoring to trace the causes of present phenomena in the records of the past." The writer of an article in the *Watchman and Reflector* was present at one of these lectures, which he characterizes as "an assault, from beginning to end, upon evangelical religion, showing what the Professor did not believe." "The religious doctrines and practices which are accepted by a majority of the people of Massachusetts, were held up to ridicule and reprobation, as superstitions belonging to a past age, and unworthy of the nineteenth century." He gives numerous expressions and statements made by the lecturer, among which are: "I preach emancipation from creeds, and churches, and priests and ministers"; "I prefer a liberal orthodox to a conservative Unitarian, most decidedly to a conservative Universalist"; and "the men of science, and not the theologians, are the true preachers of religion." In view of this, the writer asks "whether the Institute of Technology is designed to embrace theology among its legitimate studies"; and, if so, proposes a different kind of teaching.

Prof. Atkinson's reply to these criticisms is published in the *Watchman and Reflector*. He maintains that "the garbled report of the single lecture, gives about as correct an idea of the true spirit of the whole course as the distorted portrait of a caricature paper." In connection with the subjects discussed, he says: "Of course, the religious questions of the day, especially in connection with the Council of the Romish Church, came in for a share of notice, as they must wherever historical questions, whether relating to the present or the

past, are properly treated. As I am an anti-supernaturalist in my religious views, I, of course, dealt with such subjects as I was bound to do as an honest thinker, from the anti-supernatural point of view." He adds also: "As it is my belief that the religious sentiment is the strongest of all the elements in human nature, I should conceive it a gross dereliction of duty if I, as a lecturer on literature, which is only the record of human thought, or on history, which is only the record of human action, should fail to point out that practical influence of dogmas and opinions on action which constitutes the very essence of history. Religious opinions are a part of literature and a part of history." "I have myself but one rule in lecturing, the rule which every sincere and earnest person must follow, to say on every subject exactly what I think."

The writer in the *Watchman and Reflector* in the "Notes" accompanying Prof. Atkinson's reply, thinks that the Professor has only made a bad matter worse, and "has proved him to be more completely committed to the propagation of infidelity, and that of the most 'progressive' stamp, or to use his own specious euphemism, 'anti-supernaturalism' in the Institute, than we had conceived possible." This is followed by a fair statement of the question at issue. In his individual capacity, Prof. Atkinson must be allowed the largest liberty; "but as a teacher in an avowedly undenominational institution, endowed for the purpose of instruction in literature and science, his course must be declared wholly discreditable, and his defence utterly specious and illogical." "It may be needless to add," says the writer in closing, "that towards Prof. Atkinson himself we have not the slightest feeling of ill-will. He is doubtless a gentleman of culture and refinement, and amiable qualities. It is his public course alone that we censure."

To these "Notes" Prof. Atkinson prepares a reply which the *Watchman and Reflector* declines on account of its length. This led to the printing of the pamphlet, which gives us not only the two articles prepared for the *Watchman and Reflector*, but a letter to a friend in which Prof. Atkinson more definitely states his religious belief. We do not see that his second communication at all strengthens his position. He may object to being accused of infidelity, or of desiring to take an undue advantage of his position to propagate his peculiar notions; but this has nothing to do with the question at issue. He claims that he cannot treat of English literature without treating of religion;

that he cannot treat of religion without giving his own views. That he has stated his own views, he admits; that it was right for him to do so, he argues; and that he shall continue to do so while he has the honor to be a public teacher, he declares. To this, while Prof. Atkinson is a teacher in a public institution, the *Watchman and Reflector* objects, be his opinions orthodox or heterodox.

Personally, we esteem Prof. Atkinson very highly, but we think him entirely wrong in the position he has taken. We do not understand that a professor of English literature is bound to express his opinions in the class-room upon every subject treated upon by English writers. It takes nothing from his claim to be an "honest thinker," that he leaves something to be expounded by professors of science, philosophy, or theology. Nor need it detract from his dignity, if, when he is asked questions which unwisely lead into other departments of study, he should simply say that to answer such questions would lead to discussions which had better be carried on elsewhere.

It is the settled policy of Massachusetts that all her public educational institutions shall be free from sectarian bias; and this in the interests of education, and even in the interests of religion itself. Teachers may belong to whatever sect of Christians, or to whatever body of non-Christians they will, but in their class-rooms and schools they must conscientiously hold back from sight their theological, or lack of theological opinions, and honestly do the special work assigned them. The same course of reasoning that makes it the duty of Prof. Atkinson to announce his anti-supernaturalistic views of religion to a class he is guiding in the study of literature, will make it the duty of every High School teacher and Grammar School teacher under the same or like circumstances, to announce his peculiar religious views whatever they may be. Let such a course be followed, and our public school system will very soon come to an end.

We believe in "freedom of teaching." We are enjoying it. In the subjects we teach, we are perfectly free to proceed according to our own notions, and follow our own methods. But because young people are sent to us for certain specified purposes, we do not claim, nor wish, the freedom of teaching them our peculiar political, philosophical, or theological opinions.

It is but just to the Massachusetts Institute of Technology to add that the government of the Instiute have unanimously adopted the following resolution: —

Resolved, That in giving instruction to the pupils of the Institute, by lectures or otherwise, no professor or teacher shall inculcate any particular religious tenets or belief, or shall advocate or oppose any creed or doctrines held by any class or denomination of Christian believers.

THE BIBLE IN SCHOOLS. The *Commonwealth*, a newspaper ably conducted, and alive to present issues, says: —

The *Massachusetts Teacher* is among the best publications of the kind, but the editorial in the March number on "The Bible and the Schools" (insisting upon the Bible reading) is well calculated to please Catholics, and the editor's request to them not to be displeased is quite superfluous. No one can displease them in that way. The Catholic leaders are trembling in their shoes for fear that this cause of complaint will be removed. They want sectarian schools. Only so can their ascendancy over the Catholic population be maintained permanently. To remove the Protestant badge from the public schools would be to cut their claws. *Nota bene.*

Is it upon this principle that the *Commonwealth* accounts for the following from the *New York Tablet?*

To us, godless schools are still less acceptable than sectarian schools; and we object less to the reading of King JAMES'S Bible, even in the schools, than we do to the exclusion of all religious instruction. American Protestantism of the orthodox stamp is far less evil than German infidelity.

ANNUAL REPORT OF THE BOARD OF EDUCATION.

The thirty-third Annual Report of the Board of Education is not behind its predecessors in interest, and indicates that the motto of the old Commonwealth is still "Progress." The inadequacy of the supply of trained teachers from our Normal Schools is shown, —*one hundred and sixty*, the number of graduates a year, being but a small part of the number required for our schools. The large majority of teachers now annually employed are graduates of our High Schools. It is suggested that if the teachers of High Schools are trained in the Normal Schools and provision be made for a six months' course of instruction in these schools for those who desire to become teachers, the normal system will become diffused throughout the State. Increased appropriations for the current expenses of the Normal Schools are recommended, and also the enlargement of the buildings at Bridgewater and Salem. The Board are unanimous in favor of free drawing schools.

The reports of the visitors of the Normal Schools show these institutions to be in a fine condition. Boarding-houses have been established in connection with the schools at Framingham and Bridgewater. The number of scholars in attendance during the past year has been, at Framingham 146, at Bridgewater 162, at Westfield 172, at Salem 216; total 696. The number of last year's graduates is 164, nearly all of whom are now successfully employed in teaching. Every one of the fifty graduating from Westfield is now teaching in Massachusetts.

The reports of the President and Principal of the Clarke Institution for Deaf Mutes at Northampton are deserving of especial attention. The experiment of teaching mutes to articulate is likely to receive in this institution a thorough trial. The results thus far are very encouraging. Those who lack patience in ordinary school work will do well to read Miss Rogers's report.

The report of the Secretary of the Board, Hon. Joseph White, is, as usual, instructive and practical. His long experience has given him a thorough knowledge of the workings of our school system, and his wise suggestions from year to year have aided in its improvement. After explaining the legislation of 1869 in reference to the Public Schools, the Secretary devotes a large portion of his report to the duties of Towns and School Committees. These are briefly but plainly stated, and if performed according to the Secretary's ideas will give good school-houses, good equipments, and good teachers to every town in the State.

His closing remarks in regard to school supervision we commend to every friend of education: —

"I think no intelligent man, looking upon our school system from my 'standpoint,' will fail to agree with me in regarding the superintendence of the schools as the central point of weakness or of strength. It is, indeed, the spinal cord of the system. If, as in the living organism, there be weakness here, the whole system will give signs of corresponding weakness. If, on the other hand, this be sound in health and full of life, then a normal energy and force will be sent through every tissue and nerve, and the system will accomplish freely and fully its destined end."

"No matter how lavish the expenditure of money, and how well appointed and even elegant the school-houses, how ample the provision of books and every needed appliance for illustration, still, if there be weakness and incompetency in the supervision, the teachers will also be incompetent and ill-assorted, the schools will be without classification and in disorder, and the studies will be pursued, if pursued at all, at hap-hazard, with no intelligent reference to a proper end. Instead of success there will be failure; instead of satisfaction there will be mortification and disgrace."

"The sole inference which I wish to draw from this imperfect discussion, and to press upon the thoughtful attention of my fellow-citizens in every town, is this: that in all their plans, labors, and sacrifices for the maintenance of their Common Schools, — the people's colleges, — they never fail to place the 'general charge and supervision' of them in the most competent and trustworthy hands."

MEETING OF MIDDLESEX COUNTY TEACHERS' ASSOCIATION.

The Middlesex County Teachers' Association held its seventeenth Annual Meeting, at Brighton, on Friday and Saturday, April 8 and 9. The Town Hall in which the exercises were held, was densely full, and the good order, and interest manifested in the discussion, tended to render it one of the most successful conventions held in this County for a long time.

The meeting was promptly organized; E. B. Hale, Superintendent of the Schools of Cambridge, President, and H. P. Makechnie, of Somerville, Secretary *pro tem.*

The first exercise after the organization was a discussion, "Defects in the course of Study in our Common Schools."

It was opened by Mr. Chase, of Watertown. He argued that one of the great defects in our grammar-school course, is the great amount of time absorbed by Arithmetic and Grammar. Our children are put too early to learning abstractions and are fed too largely with them. He deplored the arbitrary standards adopted for admissions to the High Schools, on account of their influence in narrowing and and corrupting the teaching. Mr. Sheldon followed with very much the same views. Up to the age of eight the child should be taught to observe. He questioned the propriety of adopting a course of study for this period. Everything which would tend to cultivate the perceptive faculties should come within the range of his mental vision. He should not be circumscribed, but be allowed to roam through all nature. Up to the age of fourteen, is the period of conception, of forming mental pictures; this is the age for History and Geography, but not for pure abstractions. He deprecated, therefore, as did the previous speaker, the great amount of time spent in Arithmetic and Grammar. Mr. Burbank, of Lowell, said a hearty "amen" to the remarks of the previous speakers. Professor Tweed, Superintendent of Schools in Charlestown, agreed with the speakers generally; thought that a greater amount of time was spent in Arithmetic than there was any occasion for, but thought Grammar had been a little abused. He thought much that was taught as Grammar was not Grammar. Distinctions were made and classes recognized which did not belong to English Grammar.

At 2. P.M. a discussion occurred upon the "Best Method of teaching Reading and Spelling to a Class of Beginners."

It was opened by an essay by the Lady Principal of the Cambridge Training School, which advocated very strongly Dr. Leigh's method. An essay was also read by Miss ——, of Boston, who believed in a medium between the ordinary method and the phonetic, and preferred to mark the different sounds of the vowels by the "dictionary marks," rather than by Dr. Leigh's system. Professor Tweed also spoke on the question, explaining in some points how he would proceed with young children.

At 3, P.M. a spirited discussion occurred upon "How far are the defects apparent in the present modes of instruction the result of our systems of examination and supervision?" Mr. Wheeler, of Cambridge, opened the discussion, claiming that most of the narrow and dogmatic teaching going on in our schools is the result of the system of examinations. He did not blame the Committees so much as he did the legislation, which compelled Committees to make these examinations. The whole idea, he said, is to educate for the High School. He contended that the teacher is in duty bound to consider his own reputation, and quoted from a recent Report of a Board of School Committee, which said that

the reputation of the masters depended upon the percentage obtained by their first classes at the final examination, in support of his position.

He was followed by Mr. Mansfield, of Cambridge, who did not believe in all of the gentleman's positions, and thought it highly proper that there should be supervision, and was not in favor of changing the present methods of supervision until something better should be invented. Mr. Eaton, of Charlestown, followed, supporting the positions taken by Mr. Wheeler. He argued that intelligence alone did not make a man fit to shape the instruction in our schools, and quoted prominent educators, among whom was Matthew Arnold, in support of his position. He argued that the defects in our present modes of instruction come in a great measure from this incompetent supervision. He described the teaching done in the schools in Arithmetic, Grammar and History, and illustrated by facts, that it was owing in a great measure to the incompetency of the supervision. D. H. Mason, Esq., a member of the Board of Education, followed, in an eloquent speech in which he entered into quite an elaborate defence of School Committees, and disputed some of the previous speaker's positions. This called out a discussion in which Mr. Wheeler, of Cambridge, Mr. Sheldon, of Waltham, and Mr. Eaton, of Charlestown, joined; and for a few moments the discussion was considerably warm and brilliant.

In the evening Hon. Joseph White, Secretary of the Board of Education, gave a talk to the Convention on "Compulsory Attendance." He showed that school attendance had been compulsory since the first settlement of the State. He argued for a law compelling children to attend school at least thirty weeks in a year, instead of twelve, as now. After the lecture Professor A. E. Sloan, of Boston, gave some pleasant and interesting readings.

The Convention assembled again on Saturday, at 9 o'clock, and discussed the question: "Ought Teachers to be represented on School Boards?" Mr. Smith, of Boston, opened the discussion with a short and pointed essay. He argued in the affirmative, pointing out the advantages to be derived by this radical change in our supervision, both to the teacher and the taught. He was followed by Mr. Sheldon, of Waltham, who questioned the policy of the step, although sympathizing largely with the views of the previous speaker. Mr. Sheldon was followed by Mr Eaton, of Charlestown, who explained the Prussian and Swiss methods of supervision, in which a certain number of masters, chosen by the teachers themselves, sit at the consultations of the School Boards, and thus have a direct voice in shaping and controlling instruction.

After passing the customary resolutions, among which was one deprecating the measure now before the Legislature, to allow towns which desire, to go back to the District System, the Convention adjourned.

THE EDUCATIONAL ROOM.

We desire to call the attention of our readers, especially those in and near Boston, to our room in Selwyn's Theatre Building, 366 Washington street. It is light and airy, has a good entrance, and is open daily from 10 to 4.

The leading school-book publishers of the country have placed upon our shelves sets of their principal educational publications, especially for the convenience of teachers desirous of examining them. The leading educational journals and periodicals of the country may be found upon our table.

Mr. COPELAND, of Watertown, Chairman. No school can be well taught unless it is first well governed, and that teacher is the most truly successful in his work, who controls his pupils in such a manner as shall ultimately develop good, self-reliant, self-governed citizens.

To know how to govern well, is therefore one of the first requisites of a teacher.

Looking into our schools, and taking pupils as we find them, we observe a great diversity in physical appearance, in disposition, and in character; one is all life and animation, another sluggish and dull, — one is genial and affable, another surly and disagreeable; yet out of this diversity, the teacher finds it his duty to bring harmony and order.

Do the methods commonly employed for these ends prepare our pupils to become good citizens?

We shall endeavor to show that some of them, at least, do not have that tendency.

Among these, we will allude briefly to Arbitrary Authority — punishments, variableness on the part of the teacher, credit system, self-reporting, etc.

ARBITRARY AUTHORITY.

Human nature is so constituted that it revolts from yielding a ready and willing obedience to a peremptory command.

It is therefore, we think, a more natural method to undertake to bring a school of boys and girls, who are unused to orderly habits, to conform to all reasonable requirements *by degrees*, rather than to attempt to coerce them at once into obedience to rules, many of which seem to them severe or unnecessary.

The first method may take more *time*, and may not at first be so satisfactory, but the question ought not to be one of *time*, but of *results*.

To assume that the discipline common in our schools is arbitrary in the extreme, would of course be entirely unwarranted by the facts; and yet we believe it is far too often the case that a command is given where a request or a hint would have a better effect. John is commanded to sit up; Jane is told to attend to her lessons; Charles is ordered to march into the floor for whispering. The whole school are positively forbidden to throw snowballs towards the house under the penalty of some prescribed punishment; and many other regulations are set forth in a similar manner, and enforced too, as it is very proper they should be, if made at all.

External obedience may be secured by such a course, but it is accomplished through fear, rather than from a sense of duty, and, therefore does not, we think, have a tendency to produce good citizens.

Again, when a pupil is punished for misconduct, or breach of the rules, the reason too often is, that if such acts were allowed to continue they would interfere with the operations of the school.

Discipline is thus used only as a means to an end, and that end the exceedingly narrow one of having the operations of the school move forward harmoniously, by preventing the recurrence of the act which has made discipline necessary.

Does this have a tendency to make good citizens?

Would not a foundation be laid for a higher order of citizenship if the Teacher considered not so much the effect of the fault upon the operation of the school, as its effect upon the pupils' own character?

Let me illustrate. In a school-house where I formerly taught, was a vacant recitation room, and consequently those girls who were accustomed to bring their dinners were permitted to occupy it during noon-time.

Upon visiting the room some time after, I noticed that most of the curtain tassels were injured, and some of them completely ruined.

I mentioned the fact to the school, and said that I thought it no more than just that the damage should be made good by those who had caused it, but I would submit it to them, and leave it to their sense of honor to do as they saw fit.

The result was, that a few mornings after, one of the girls placed upon my table, a sufficient number of new tassels to supply all the windows in the room. They were attached to the curtains, and (for aught I know) hang there still, as a sort of testimonial to the *quality of the punishment.*

VARIABLENESS.

Occasionally a Teacher is found whose character is fitly illustrated by Goldsmith's Village School-master.

> "Well had the boding tremblers learn'd to trace
> The day's disaster in his morning face."

He is never two days in the same mood. If a good impression is made one day, it is effaced the next, and no progress can be made; pupils are irritated rather than controlled, and the effect is to undermine the moral tone of the school.

THE CREDIT SYSTEM.

Marking systems are sometimes used in such a manner as to have a pernicious influence.

This is the case when they are so used that pupils are more anxious to obtain a large number of credits, than they are about the means employed, or when they are willing that their recitations and conduct should fall to the lowest possible standard that will allow the full number of credits.

It is the case when the system permits them by a slight deception, to *sometimes* obtain a credit, and when the Teacher consciously makes it appear that it is more honorable and praiseworthy to have a large number of credits, than to do according to the best of one's ability from a sense of right and duty.

It is the case also, when the marking of recitations and deportment is combined in such a manner as to give the dull, but faithful and well disposed pupil, no chance beside the smart and active, but sly and unprincipled one.

Kindred to the credit system and sometimes used as a part of it is

SELF REPORTING.

About all that need be said about it, can be summed up in these words; — It makes pupils untruthful.

For an able discussion of this topic we would refer to the *Mass. Teacher* of 1858 p. 178, from which we take the following: "It is far better to throw scholars upon their sense of honor to *act* as *men* and *women*, or as worthy candidates and aspirants for these exalted appellations, than to appeal to their fear of dishonoring themselves by reporting their misdeeds."

OFFERING OF PRIZES.

We cannot call attention to this part of our subject better than to give the words of the School Committee of Boston in relation to prizes and medals, — found in the report for 1867.

"They were found to be less an incentive to sound scholarship, than to the acquisition of that degree of familiarity with the text-books as ensured a brilliant or creditable examination.

"Many deferred, till towards the close of their course, any very serious attention to their studies, and then, by feverish and exhausting exertion, unnaturally strained their faculties and undermined their health. An ambition to excel, took the place of a conscientious desire to make the best use of the privileges provided for them, and, especially in the female department, engendered rivalry, jealousy, and other unamiable traits."

This will conclude what we intend to say of *special* methods.

All present will doubtless suggest to themselves others, of equal or greater importance, which have no tendency to fit pupils for the duties of life, because they appeal to the lower instincts of selfishness and caprice, rather than to reason and conscience; or (because) by too many external restraints and incentives, they weaken the self-governing powers, and forestall self-control.

Mr. SMITH. Whenever we ask a pupil to tell something about himself we involve the whole principle of the self-reporting system, and it is just as legitimate for us to make use of the conscience of a scholar for his own good and that of the school, as it is to employ his eye or hand. In manhood he will be subjected to demands upon it in various ways, and he will be placed upon his honor to tell the truth. We ask no more of him than the Internal Revenue Law asks of us. False returns may be made, but if the habit of reporting truly is established in childhood, it will be continued afterward. Judgment must be exercised in the method of inquiry, but if the system be fore-determined, the liability to deception will be very small. Self-reporting may make apparent the dishonesty of a pupil, but that is all it will do; the fault lies in the moral condition and not in the appearance. Dr. Wayland was once interrogated by a student in respect to the duty of giving information about misconduct, when he replied, "Do you think I would ask you a question which it would be dishonorable to answer?"

MR. PAYSON. There is a material difference between reporting a moral obliquity and giving an account of one's success in the day's studies; the former always involves the question of wright and wrong, the latter often requires only the best judgment of the pupil. God set us an example of calling the individual to account for himself when he asked of Cain, "Where is thy brother?" and the Apostles did the same with Ananias and Sapphira. Our methods of discipline are based upon law. Obedience is required. The laws are carefully framed, are understood clearly, and are reasonable. Such being the case, nothing less can be demanded than implicit and unquestioned compliance. I believe our teachers in general do inculcate good morals, temperance, patriotism, and fidelity to duty, and therefore must conclude that they will rear up good law-abiding citizens.

Mr. MESERVE, of North Bridgewater: We must secure prompt, cheerful and exact obedience. How can we do this? With some pupils it can be developed only through fear of punishment; with others by appealing to their moral principle. We must mingle the two, for the latter will not be sufficient in every case. Some pupils will not be honorable, just as some men in every community are kept in peace only through the penalty affixed to violating law. If our scholars should see a man murdered, they would not doubt as to their duty of testifying against the criminal; but let them be called upon to criminate a schoolmate, and they are full of subterfuges. If by any means we can secure a sentiment against the violator of our rules, we shall have accomplished a result which will conduce to good citizenship.

MR. ARMINGTON: One of the objections to a self-reporting system is, that there are pupils who will be over-conscientious, and consider trifles which are no violation of rules as serious infractions of them, yet perhaps a teacher knowing their sensitiveness can accommodate his record to their condition. As long as our communities hold lax views in respect to school morals, we may expect to have many difficulties, in elevating the standard among the children, and as one district is composed of a different class from another, so the moral tone in one will be far higher than in another.

Mr. M. G. DANIELL: If we adopt any method where pupils are accountable only for the disorder or immorality which the teacher sees, then they will become eye-servants, and consider whatever can be done without detection as fair gain. Self-reporting throws the responsibility on the scholar; and if the teacher exercise moderate watchfulness, the habit of reporting honestly will soon be established.

N. E. WILLIS,
Rec. Sec.

NATIONAL TEACHERS' ASSOCIATION.

THE annual meeting of the National Teachers' Association will be held in Cleveland, O., August 17, 18, and 19.

Addresses or lectures will be delivered by: —

President CHARLES W. ELIOT, of Harvard College.

Gen. JOHN EATON, Jr., National Commissioner of Education. Subject: "The relation of the National Government to Public Education."

Hon. FREDERICK A. SAWYER, U. S. Senator from South Carolina. Subject: "Free Common Schools — what they can do for a State."

Hon. A. S. KISSELL, State Superintendent of Schools in Iowa. Subject: "The duty of the State with reference to higher education."

Papers will be read by: —

Prof. E. A. SHELDON, Principal of Normal School at Oswego, N. Y. Subject: "The proper work of a primary school."

EBEN TOURJÉE, Mus. Doc., Director of New England Conservatory of Music, Boston. Subject: "Music in its relations to Common School Education."

Prof. GEORGE A. CHASE, Principal of Female High School, Louisville, Ky. Subject: "Motives and means which should be made prominent in school discipline and instruction."

I. S. BAKER, Esq., Principal of Skinner Grammar School, Chicago, Ill. Subject: "The claims of English Grammar in Common Schools."

Reports will be made by: —

Dr. J. W. HOYT, President of Wisconsin Academy of Arts, Sciences, and Letters. Subject: "A National University."

Prof. S. H. WIHTE, editor of *Illinois Teacher*, Chairman of the Committee upon the revision of the Constitution of the Association.

Practical Exercises, illustrating the subjects of Vocal Music and Primary Instruction will be given, with the aid of classes of children from the public schools of Cleveland.

The announcements in regard to entertainment in Cleveland, the arrangements for reduced railway fares, and the details of the programme, will be made as soon as possible.

DANIEL B. HAGAR, *President N. T. A.*
A. P. MARBLE, *Secretary.*

MEETINGS.

THE AMERICAN NORMAL ASSOCIATION will meet in Cleveland, Ohio, on the 12th and 13th of August. A programme of proceedings will soon be issued.

THE NATIONAL SUPERINTENDENTS' ASSOCIATION will not issue any programme, but will hold a business meeting on the afternoon of August 16th, at Cleveland, Ohio.

THE PLYMOUTH COUNTY TEACHERS' ASSOCIATION will meet at Abington on Friday and Saturday, the 3d and 4th of June.

INTELLIGENCE.

E. B. HALE, of Cambridge, has resigned the office of Superintendent of Public Schools, his resignation to take effect in September. Mr. Hale has been a most efficient public officer, and in many ways has rendered good service in the educational field.

JOHNATHAN TENNEY has been appointed Superintendent of Public Schools and Principal of Free Academy, Owego, Tioga county, New York.

CHARLES F. KING, Principal of the Fifth Street Grammar School, New Bedford, will take charge of the Collins School, Gloucester, in September. Salary, $1800.

HARTFORD, CONN., has not a poor school-house within its limits. The two new school-houses lately erected are costly and elegant structures. The Brown school-house, costing $180,000, possesses every convenience, and accommodates about nine hundred pupils. The principal of the school is F. F. Barrows. The High School building is one of the finest edifices of its class in the country.

BOOK NOTICES.

HISTORY OF THE AMERICAN CIVIL WAR. By John William Draper, M.D., LL.D. Vol. III. New York: Harper & Brothers. Dr. Draper's admirable history of the Rebellion is now completed. It consists of three octavo volumes of about five hundred pages each. We are exceedingly fortunate in having so fair, trustworthy, and readable an account of that great struggle so soon after its close. Teachers especially, who are continually called upon to look up questions in regard to it, will find this work well adapted to their wants. The general reader will follow the story with unabated interest from beginning to end. We congratulate Dr. Draper upon the successful issue of his labors.

SELF-HELP; with illustrations of Character, Conduct, and Perseverance. By Samuel Smiles. New York: Harper & Brothers. A well-known book; but now revised and enlarged by the author. There is no better writer of biography than Samuel Smiles. This work, however, is rather a series of sketches of remarkable men to show what has been done, and to impress upon the reader's mind what may be done. It should be in the hands of every young man. It may be regarded as one of the very best books in its line ever written.

THE BAZAR BOOK OF DECORUM. New York: Harper & Brothers. This treats of the Care of the Person, Manners, Etiquette, and Ceremonials; and was evidently written by a sensible person. Its standard is above that of merely fashionable society; its teachings are on the side of morality and good taste.

HAND-BOOK OF THE SULPHUR CURE, as applicable to the Vine Disease in America, and diseases of Apple and other fruit-trees. By William J. Flagg New York: Harper & Brothers. Mr. Flagg states modestly in his preface that he writes rather as a learner than a teacher. But his large experience in vine-growing countries, and careful observation, give to his recommendations great value, and his treatise is to be commended to those interested in fruit-culture.

A BRAVE LADY. By the author of "John Halifax."

TOM BROWN'S SCHOOL DAYS. New edition, with illustrations. By Arthur Hughes and Sidney Prior Hall.

DEBENHAM'S VOW. By Amelia B. Edwards.

These are from the same publishers. *Tom Brown's School Days* has had hosts of readers, and deserves its continued popularity. *A Brave Lady*, though not equal to the author's best, is yet a good story. *Debenham's Vow* will interest novel readers.

A. WILLIAMS & Co., corner School and Washington streets, have the above on their counters.

CÆSAR'S COMMENTARIES on the Gallic War; with explanatory notes, a copious dictionary, and a map of Gaul. By Albert Harkness, LL.D., Prof. in Brown University. New York: D. Appleton & Co. If the number of editions of classical authors issued by the publishers is any criterion, there is no falling off in classical studies. This edition of Cæsar has been prepared by Prof. Harkness to follow his Latin Reader. It has just those characteristics that recommend it for school use. The text is in accordance with the best authorities; the notes are judicious, rendering the student the help he needs; the vocabulary is ample, and remarkably well adapted to the work itself. This last was mainly prepared by Mr. A. M. Gay, of the Latin School, Boston, to whom Prof. Harkness acknowledges his indebtedness. In addition we may say that the work is so well printed that it presents about as attractive a page as can be desired.

ELEMENTS OF LATIN GRAMMAR for Schools. This work, by the same author and publishers, has been before the public a year, and has been thoroughly tested. Prof. Harkness' larger grammar was received with unprecedented favor. This smaller work was prepared agreeably to his original plan of presenting a more elementary manual. Those preferring the shorter elementary course find this book well adapted to their wants, and possessing many of the peculiar merits of the larger work.

FIRST BOOK OF BOTANY. Designed to cultivate the observing powers of children. By Eliza A. Youmans. New York: D. Appleton & Co. Here is a good book. We seldom see an elementary work we so thoroughly like. The study of Botany in accordance with its method may be commenced by young children. It cannot fail to be delightful to them, and very useful. The lessons are not to be learned from the book, but from nature. Thus the observing and comparing powers of the growing mind are continually exercised, and those mental habits formed which will by and by render easy the study of any, or all, of the natural sciences.

WM. HENSHAW, at Lee & Shepard's, 149 Washington street, Boston, is the New England agent for D. Appleton & Co.'s publications.

THE LAWS OF DISCURSIVE THOUGHT: being a Text-Book of Formal Logic. By James McCosh, LL.D., President of New Jersey College, Princeton. New York: Robert Carter & Brothers. Dr. McCosh is a clear, concise, and vigorous writer. He takes hold of his subject with a strong grasp.

Deeming the new logic defective and erroneous, infected with the metaphysics of Kant, he falls back in a great measure upon the old, but is called upon to explain some operations of thought by unfolding laws unnoticed by older logicians. Regarding the Notion as at present the most defective part of Logic, he has devoted a greater space to its consideration. This book is an able production, and worthy the closest study.

Wonders of Italian Art. By Louis Viardot. Illustrated with twenty-eight engravings. New York: Charles Scribner & Co. Another volume of the Illustrated Library of Wonders. It is a capital book, attractive both to old and young. It is almost entirely confined to old Italian painters and their works.

MISCELLANEOUS.

De Lesseps' Monument. — The Greek text of the polyglot inscription for the monument in honor of the Suez Canal has been composed by Dr. Reinhold Klotz, Professor Eloquentiæ at the University of Leipsic, in consequence of a commission to that effect which he received from Paris. The text, literally translated, is as follows: "In the year of the Hegira 1282 (1869), under the renowned government of the illustrious Padisha Abdul Azis Chau, Emperor of the Ottomans, and under the wise rule of the noble Ismael Pasha, Viceroy of Egypt, this monument was erected to celebrate the excavation of the Suez Canal, which is destined to multiply their commercial relations, to promote the benificent conquests of civilization, and to favor a more intimate union between all the members of the human family. This great work of peace owes its origin to the courageous perseverance of Ferdinand Lesseps, with the co-operation of the principal maritime nations, and under the patronage of the Emperor of the French."

The Rod. — "The best part of education in England used formerly to be the rod. It made good scholars, brave soldiers and honest gentlemen. It acted upon our English youth in a manner the most gentle, the most wholesome, the most effectual. It was applied ndiscriminately, it is true; but were we any the worse for it? Is there any man of Eton or Westminster who reads this, and can say that any part of him was injured by rod application? Not one. Is there any, to go a step further, who can say he was not benefitted? We pause for a reply. None? Then none has it offended. Blessings be on the memory of the rod."—*Thackeray.*

Seven Practical Rules for a Teacher. — 1. Never attempt to teach what you do not perfectly understand.

2. Never tell a child what you can make that child tell you.
3. Never give a piece of information without asking for it again.
4. Never use a hard word when an easy one will answer.
5. Never make a rule that you do not rigidly enforce.
6. Never give an unnecessary command.
7. Never allow a child in a class without something to do.